

## **Demographic Comparisons of Former Yugoslavian States:**

### **Bosnia and Herzegovina and Slovenia**

#### **Bosnia and Herzegovina Demographic Profile**

##### **Overview**

Bosnia and Herzegovina (BiH) is a less developed country (LDC) in the Balkans that shares its borders with Serbia, Croatia, and Montenegro. All of these surrounding countries and BiH were part of the Republic of Yugoslavia up to the early 1990s and have since gained recognition as independent countries. The conflicts that resulted in independence for BiH, Croatia, and Kosovo were marked by more intense and prolonged fighting than in Slovenia which had only participated in armed conflict for 10 days. By contrast, conflict in BiH lasted from 1991 to 1995 and resulted in high casualties, displacement of population, and devastation to the economic structure. Even before the wars of independence, BiH was one of the poorer regions in Yugoslavia mainly because of political corruption and strongly opposed nationalist party lines within the government on the state level.<sup>1</sup> Yet, as would be expected, pre-war levels of development were far greater than levels after the conflict because as a part Yugoslavia, BiH shared in the prosperity of the mineral trade with foreign markets because of an abundance of coal, tin, iron and other minerals and enjoyed federal funding for construction and infrastructure projects from Belgrade.

In 1995, shortly after a peace agreement was signed in Paris to end hostilities, the Dayton Accords established a government that resembled that of Yugoslavia within BiH. The Accords created a central government to oversee foreign policy and much like the autonomous states of

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<sup>1</sup> Yugoslavia allowed fairly autonomous status to its states because it was based on the confederation model, giving the national government in Belgrade responsibility for the Army (JNA) and international relations and leaving day to day government to local and state governments.

Yugoslavia, the accords divided BiH into two distinct autonomous states, the Federation of Bosnia and Herzegovina (FBiH) and the Republika Srpska (RS).<sup>2</sup> Both of these states send representatives to the federal capital in Sarajevo and defer daily government to the entity level. These two entities have split the country almost in half by way of land area and population. The RS claims roughly 25,000 sq. km and a population of about 1.5 million while the FBiH claims roughly 26,000 sq. km and a population of around 2.8 million. These entities are also split along ethnical and thus political lines. The RS is almost exclusively made of Bosnian Serbs while the FBiH is primarily made up of Bosniaks<sup>3</sup> and Croats, and these divisions are at the center of the problems that have slowed the progress of BiH, and kept it in the LDC category.

### **The Geography of Bosnia and Herzegovina**

The land found in BiH is mostly made up of moderate mountains (as high as 2,300m) and river valleys. The climate is generally considered to be continental with the exception of the 20km coastline area in the south that has a Mediterranean climate. 19.6% of the 26,000 sq. km of BiH's land is considered arable but because of political and infrastructure problems, most of this land is not being used for agriculture or any other purposes. The topography of the area also contributes to the ethnic distribution in BiH. Villages and cities separated by mountains and poor roads tend to be homogeneous ethnically, meaning that one town has nearly 100% Bosniak, Serb, or Croat populations, this tendency further adds to the political instability in BiH.

### **The Economy of Bosnia and Herzegovina**

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<sup>2</sup> Central Intelligence Agency. *The World Factbook*. <https://www.cia.gov/library/publications/the-world-factbook/geos/si.html>.

<sup>3</sup> Bosniaks can be a term used for people of Turkish decent or descendents of Slavs who were converted by the Ottoman Turks who made a conquest of the region in the 15<sup>th</sup> century.

As was mentioned above, the mountains are rich in minerals and mining is an industry that is struggling to regain its pre-war status as BiH's economic backbone. The timber industry is also one of the main industries and because it takes less capital investment to log trees and use existing out-dated mines, environmental concerns have risen. This is typical of other LDCs who are forced to exploit their natural resources without considering the environmental effects. BiH also suffers from one of the highest unemployment rates in the region. Many of these are young people who are prevented from getting jobs because of a lack of investment in new businesses and industries. The unemployed are also at a disadvantage when seeking jobs outside of their country because many MDC countries have banned visas for BiH citizens in fear of Bosnians staying illegally.

Category	Per Capita Income	Gross National Product	Unemployment	Population below Poverty line
In (\$)	6,400	29.5 Billion	40%	25%

Figures from CIA World FactBook (CIAWF) 2009 estimate

Corruption is another problem for the Bosnian economy. Legitimate investors and entrepreneurs are weary to spend their money in BiH because of a strong mafia presence and corrupt, or at best, poor police enforcement. For instance, local politicians are routinely paid to block prospective business owners from threatening local monopolies. Incidents of corruption like these coupled with government contracts being identified with shady dealings, undermine the population's faith in their struggling economy.

### **The Demography of Bosnia and Herzegovina**

There is a discrepancy in the total population numbers of BiH given by the CIAWF, WPD, UNWPP, and USCIDB. The CIAWF and USCIDB estimate BiH's 2010 population as being over 4.6 million while the UNWPP and WPD estimate the same population at only 3.8

million. The reason for these wild inaccuracies is the lack of any census in BiH since 1991. Estimates have been made based on calculations using the pre-war population, crude mortality rate, crude birth rate, war casualties, displaced persons, and other factors. All sources agree that the present population numbers are near those of 1991. Like other LDCs, BiH has a greater percentage of population aged 0-14 than population over 65, but only to a slight degree. It also has a slightly lower LEB, literacy rate, and urbanization percentage than the MDCs in the region and higher rates of infant mortality and rates of urbanization, all typical of LDCs. The rate of natural increase is the curiosity. The trend for most LDCs is a high RNI, but in the case of BiH

Total Population	% of pop. 0-14	%pop.>65	% Urban	Rate of Urbanization	Infant Mortality	Life Expectancy at Birth	Rate of Natural Increase	Net Migration Rate
4,613,414	16**	14**	47%	1.4%	5-12/1000 live births**	78.5	0*	0-3.3/1000 ***

Figures from CIAWF 2009 estimate \*U.S. Census International Data Base (USCIB)\*\* Low estimate from World Population (WPD) Datasheet. High Estimate from UN World Population Prospects (UNWPP). \*\*\* Low estimates from WPD & US CIBD. High estimates from CIAWF & UNWPP.

the RNI is listed as 0 and is expected to fall into the negative. There are various explanations for this anomaly. One explanation is the poor state of the economy which would detract from people's desire for children. Another explanation is that BiH was once part of an MDC that did go through the demographic transition and only fell into LDC status because of conflict. This means that attitudes and traditions are more similar to those of MDCs than LDCs, therefore medical technology and foreign aid had little impact on a RNI that was already low before 1991. Overall the demographic numbers for BiH are better than the average LDC, and this makes BiH a unique case because it had made it through the demographic transition and then was forced into LDC status.

In the case of BiH, the effect of the ethnic and religious make up of the population can not be overstated. The war did little to help alleviate the tensions between these ethnic groups, and in fact added to the problem BiH deals with today. In BiH the main point of dispute and political instability stems from the relations between Bosniaks and Bosnian Serbs. Each ethnic group controls the entities mentioned above, the Bosniaks control the FBiH and the Serbs control RS. The war generally polarized these ethnic groups into their respective regions. In pre-war

<b>Ethnicity</b>	<b>Bosniak 48%</b>	<b>Serbs 37.1%</b>	<b>Croats 14.3 %</b>	<b>Other .6%</b>
<b>Religious Affiliations</b>	<b>Muslim 40%</b>	<b>E. Orthodox 31%</b>	<b>Catholic 15%</b>	<b>Other 14%</b>

Figures from CIA World Factbook 2009 estimates

Yugoslavia, the ethnic and religious differences were generally put aside for the greater good of the state and each ethnic group lived relatively heterogeneously throughout all of the Yugoslav states. The war changed this distribution drastically in BiH, as the result of ethnic cleansing and a large exodus of refugees. There are still many abandoned dwellings in the BiH countryside left by Bosnian Serbs (mostly Orthodox Christians) or Bosniaks (mostly Muslims) during the war to which the original inhabitants have yet to return. This continues to be a legal and political problem in BiH as Serbs are trying to get back into their houses in Bosniak areas and vice versa. It is also common for people of the opposite ethnicity to occupy these abandoned dwellings and further prevent the original owners from re-occupying their homes. Issues such as these have gone a long way to stalling political cooperation and economic growth in BiH.

BiH took the full brunt of the conflict that shattered Yugoslavia and has been paying the price ever since. The infrastructure that was put in place while part of Yugoslavia that might have enabled it to reach MDC status on its own was affectively destroyed and the country was

left divided among two entities that have little trust for one another. BiH is a very interesting case because some of its statistics do not seem to represent an LDC. Its LEB is somewhat high, the age make up between persons under 0-14 and older than 65 is relatively close and the RNI is more similar to European MDCs rather than most other LDCs. The numbers are similar in the other former Yugoslavian states because traditions and attitudes in these LDCs are more like those of Italy, Hungary, Austria, and other Southern European MDCs. BiH is now a small independent country that has to initiate its own transition in spite of political and ethnic divisions. As BiH looks to rebuild and recover under these circumstances, it is possible that BiH will not have to make the demographic transition to become a MDC since gross birth rates (8.63/1000) and gross death rates (8.85/1000) are already low. The transition to MDC status will have to happen in a way that is inconsistent with the previous model. For BiH, one step appears to be for nationalist politics and politicians to put their differences aside and work for common goals for BiH. This is of course easier said than done.

## **Demographic Profile of Slovenia**

### **Overview**

Slovenia is a More Developed Country (MDC) bordering Italy, Austria, Croatia, and Hungary on the transition zone between Eastern and Southern Europe. It is also one of the former parts of the Republic of Yugoslavia, gaining its independence in 1991 after a 10 day conflict with the Yugoslavian Army headquartered in Belgrade. The relatively short conflict is considered to be one of the factors that prevented Slovenia from falling into Less Developed Country (LDC) status like other former Republic member states i.e. Serbia, Montenegro, Macedonia, Bosnia and Herzegovina, Croatia, and Kosovo.<sup>4</sup> Another reason Slovenia was able

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<sup>4</sup> Kosovo is only partially recognized as an independent state at the time of writing.

to keep MDC status is that the ethnic make up of the country had remained relatively stable and uniform compared to the other former Republic states. This not only factored in on shortening the period of violence in Slovenia by having few ethnic minorities within their borders (the reason for prolonged conflict in the other states), but allowed for a greater amount of political cohesiveness that the other former Yugoslavian member countries still struggle with. In spring of 2004, Slovenia became the first, and so far, only former Yugoslavian state to join the European Union and adopt the Euro as its currency.<sup>5</sup> Slovenia's turn towards Western Europe appears to have separated it from its former sister states that still are working on recovering from political and ethnic turmoil.

### **The Geography of Slovenia**

According to the CIA World Factbook, the country of Slovenia occupies 20,273 sq. km, with only 8.53% of that being arable land and only 46 km of coastline on the Adriatic Sea.<sup>6</sup> The central and eastern parts of the country are made up of rolling hills with many river valleys while the western part of the country is part of the Julian Alps with the highest points exceeding 2,800m.

### **The Economy of Slovenia**

By avoiding the loss of infrastructures like communications and industry that other countries in the region suffered by way of conflict, Slovenia was able to build up its economic base to remain on par with other MDCs in the region like Italy and Austria. Though the recent

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<sup>5</sup> EU membership has been extended to Croatia but fears that the European market would ruin the already weak economy have led to elections resulting in independence from the EU.

<sup>6</sup> Central Intelligence Agency. *The World Factbook*. <https://www.cia.gov/library/publications/the-world-factbook/geos/si.html>.

economic recession has created a decrease in per capita income and gross domestic product, Slovenia's numbers far exceed those of its former sister states. Another reason for this

Category	Per Capita Income	Gross National Product	Unemployment	Population below Poverty line
In (\$)	27,700	55.46 billion	9.2%	12.3%

Figures from CIA World FactBook 2009 estimate

stems from Slovenia's embracing of the EU and trade with other member countries, mainly Germany and Austria which provide strong markets for Slovenia to trade in. On the flip side, it also means that Slovenia is at the mercy of these stronger EU markets and the result can be seen in the recent economic down turn mentioned earlier that brought per capita income down from \$30,000 in 2008.<sup>7</sup> Among the seven former states of Yugoslavia, Slovenia has the fourth largest population behind Serbia, Croatia, and Bosnia and Herzegovina yet it is the only one with a per capita income over \$20,000.

### The Demography of Slovenia

The World Population Datasheet (WPD), UN World Population Prospects, and U.S. Census Bureau place Slovenia's population just over 2 million persons, give or take 100,000 living at a density of 101 persons per sq. km.<sup>8</sup> The rate of natural increase (RNI) follows the Western European model for a MDC ranging from .02% on the WPD to -.113% on the CIA Factbook. This suggests that like other Western European countries, Slovenia has reached stage 4 of the Demographic Transition Model and we can also see this as the percentage of older persons is increasing, which is another indicator of MDC's. Infant mortality rates (IMR) are also on par

<sup>7</sup> Ibid.

<sup>8</sup> Population Reference Bureau. *World Population Data Sheet*. <https://www.prb.org>.



with other MDCs in Europe as well as life expectancy at birth (LEB). There are curiosities in the numbers when we look at the percentage of the population that is urban and the urban growth rate for Slovenia that we would not expect from an MDC. First of all, compared to other MDCs

<b>Total Population</b>	<b>% of pop. 0-14</b>	<b>%pop.&gt;65</b>	<b>% Urban</b>	<b>Rate of Urbanization</b>	<b>Infant Mortality</b>	<b>Life Expectancy at Birth</b>	<b>Rate of Natural Increase</b>	<b>Net Migration Rate</b>
<b>2.1 million</b>	<b>13.5</b>	<b>16.5</b>	<b>50%</b>	<b>-0.6</b>	<b>2.4/1000 live births</b>	<b>79.92</b>	<b>-.113%</b>	<b>.52/1000 persons</b>

Figures from CIA World Factbook 2009 estimate

in the region like Germany, Italy, and Austria, the percentage of people living in urban areas is on the average 15% lower. One should be careful not to jump to conclusions based on these numbers. This might not necessarily be an indication of less development for various reasons. One such reason is that the highway system and open borders (to EU countries) that Slovenians enjoy enables longer commutes for those that work in urban areas. It is also a possibility that improved communications no longer make it necessary for people to live in urban areas. Both communications and transportation were part of the infrastructure that was left intact after the break of Yugoslavia. There is yet another reason the lower percentage of people living in urban areas and the rate of Urbanization are far below that of other MDCs that is more unique to Slovenia. Slovenia has become a destination spot for European tourists, especially in its alpine regions that attract mountain climbers and extreme sport enthusiasts. This may be reflected in the percentage of the workforce that is involved in services being at 62.8% as compared to only 37% of the population being involved in industry and agriculture.<sup>9</sup>

Another significant part of the demographics of Slovenia that is important to mention especially in order for comparison to other former Yugoslav states is the ethnic and religious

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<sup>9</sup> CIA Factbook.

make up of the population. Slovenia avoided prolonged conflict because it had a relatively heterogeneous Slovene and Christian population. Since there were very few ethnic Serbs living in Slovenia before the war, the Yugoslavian Army (JNA) could not use their reasoning for using force for protecting Serbs to the extent that they did in Croatia and Bosnia and Herzegovina.

<b>Ethnicity</b>	<b>Slovenes 83.1%</b>	<b>Serbs 2%</b>	<b>Croats 1.8 %</b>	<b>Bosniaks 1.1%</b>
<b>Religious Affiliations</b>	<b>Catholics 57.8%</b>	<b>Muslims 2.4%</b>	<b>E. Orthodox 2.3%</b>	<b>Other 37.5%</b>

Figures from CIA World Factbook 2009 estimates

Slovenia's entry into the EU and turn towards trade with Western Europe is not that surprising given their close identification with Italy in the west and Austria to the north. This identification is in part due to the majority Catholic population shared with these neighboring countries and their lack of significant minority religions. Without the ethnic and cultural conflict, Slovenia remained a much more stable political entity that made it easier to negotiate with the MDCs of Western Europe.

In the shatter belt that was Yugoslavia, Slovenia tends to get lost in the shuffle among its more newsworthy former sister states. Slovenia quietly survived the turmoil that left the other former states as LDCs or in transition status after the first decade of the 21<sup>st</sup> century. In some ways this is surprising, for instance the Slovenian language shares 90% of its vocabulary with Serbo/Croatian rather than Italian, German, or Magyar. Yet its political and cultural tendency is closer to that of its EU partners. Slovenia's statistics are also more similar to its EU neighbors than its own former sister states, the low mortality rate, low infant mortality rate, high percentage of people over 65, per capita income, and literacy rate of 99.7% are comparable with most of the MDCs in the region.<sup>10</sup> The more recent down turn in the economy of Slovenia further illustrates the importance of its inclusion in the EU. The smaller market of Slovenia is at the mercy of EU

<sup>10</sup> Ibid.

giants like Germany and France but the benefits to open trade within the EU have so far outweighed the shortcomings. There is still much room for improvement in the Slovenia's European position, but it is a certainty that Slovenia's population helped keep it out of the situation that set its former sister states back.

### **Comparisons in Mortality**

In the first section of this project, the more developed country (MDC) Slovenia and less developed country (LDC) Bosnia and Herzegovina (BiH) were introduced with a brief summary of demographic, ethnic, and economic statistics along with some brief background information. In this 2<sup>nd</sup> section of the project, the mortality statistics of these two nations will be compared and analyzed. The two countries that are the focus of this examination pose some issues with gathering regular statistical information over time for some of the reasons that were already mentioned in section 1. First, both Slovenia and Bosnia and Herzegovina were part of the same country before 1990. For this reason some of the statistical data, especially from the U.N. Demographic Yearbook will be from Yugoslavia collectively with the exception of the 1991 data which separates Slovenia but still has the title "Former Yugoslavia" representing Croatia, BiH, and Greater Serbia (including Kosovo, Montenegro, Macedonia, Republika Srpska, Vojvodina).<sup>11</sup> Second, since 1991 BiH lacks many of the specific records that are available for Slovenia since that time. Lastly, deaths and death rates by causes is a statistic that is not available in the Demographic Yearbooks at or around 1970, this further challenges the ability to make comparisons. Despite these shortcomings, there are other measures that are available in the Yearbooks and other sources that can be examined for assumptions, patterns, and summary.

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<sup>11</sup> The term "Greater Serbia" has the meaning for Serbia during the wars of any place in the former Yugoslavia where ethnic Serbs live, which would mean parts of all of these places.

Because of the special case of these two countries once being part of the same country, it would be advantageous to look at other countries in the region for comparison when addressing Slovenia and BiH when they were part of Yugoslavia and individual statistics are not available. In order to make the comparisons clearer, notes to the statistics will be provided for quick identification. [YUGO] will represent Yugoslavia as it existed before 1990. Slovenia in 1990 [SLO90] will be compared with the Former Yugoslavia [FYUGO]<sup>12</sup> and there after Slovenia [SLO] and Bosnia and Herzegovina [BiH] will be compared where possible.

Crude death rate (CDR) is one of the categories that have been separated for each country back to 1970. Since Slovenia and BiH were separate administrative regions within Yugoslavia,

<b>Table 1: Crude Death Rates since 1970</b>			
<b>Years</b>	<b>[SLO]* (total pop.)</b>	<b>[BiH]* (total pop.)</b>	<b>[YUGO]^ (total pop.)</b>
1970-75	10.2 (1,670,000)	6.9 (3,564,000)	8.9 (1970) (20,522,972)
1980-85	11 (1,832,000)	6.8 (3,914,000)	8.7 (1978) (21,974,000)
1990-95	9.9 (1,927,000)	10.4 (4,309,000)	8.9 (1990) (23,818,005)
2000-05	9.5 (1,985,000)	8.4 (3,694,000)	-
2005-10	9.5 (2,025,000)	9.8 (3,760,000)	-

some data was gathered at Ljubljana and Sarajevo respectively and allows a certain degree of historical analysis. The relatively higher CDR in the 70s, 80s, and first part of the 21<sup>st</sup> century for Slovenia fits the typical pattern of MDCs compared to BiH's lower CDR but again an anomaly breaks the expectation in the 90s. This anomaly is of course due to the civil wars.

\*World Population Prospects (WPP) ^Demographic YB

Life expectancy at birth (LEB) is another convenient measure because it has been recorded separately for both countries back to 1970. LEB is also a better measure for international comparisons because a higher LEB usually means better health care and living conditions. It should be noted that the comparisons in the chart use data for the individual

<sup>12</sup> The statistics for Former Yugoslavia in 1990 are much more representative of an LDC. In fact the other former Yugoslav states besides Slovenia have continued to have similar economic status since the end of the wars.

Table 2: Life Expectancy at Birth since 1970									
Years	[SLO]*			[BiH]*			[YUGO] [FYUGO]Ä		
	Both	M	F	Both	M	F	Both	M	F
1970-1975	69.8	66	73.5	67.5	65.2	69.5	-	65.4	70.2

countries is in 5-year spans courtesy of the World Populations Prospects while the data for Yugoslavia is given at certain years by the Demographic Yearbook in which the country did a survey or census. With this in mind, in every time period, Slovenia has had a higher LEB than BiH and Yugoslavia as a whole. Yet for an LDC, BiH is still above the average LEB for LDCs for most of the time periods. Again the major deviation is in the 90s when the LEB for men

\*World Population Prospects (WPP) †Demographic Yearbooks published by the United Nations.

took a dramatic dive as one would expect. The male LEB which was 69.2 and had been steadily rising since the 70s fell to 55.8 in the war period 1990-95 (lower than LDCs like Cambodia and Namibia at the same time), dropping the country's LEB to 63.7 from the pre-war LEB of 71.1! Since the conclusion of the war, BiH's LEB has risen near that of the MDC average of 77 and far above that of the LDC average of 65.<sup>13</sup> It is also interesting to note that BiH has been slightly behind [YUGO] and [FYUGO] while Slovenia has a slightly higher LEB than the others.

<sup>13</sup> Population Reference Bureau. *World Population Data Sheet*. <https://www.prb.org>.

1980-1985	71.1	67	75.1	70.7	68	73.4	-	-	-
1990-1995	73.7	69.6	77.6	63.7	55.8	73.2	-	69	75
2000-2005	76.5	72.6	80.3	74.4	71.6	77.2	-	-	-
2005-2010	78.4	74.6	81.9	75.1	72.4	77.7	-	-	-

Age specific death rates (ASDR) are considered to one of the best indicators of development because unlike CDR, ASDR compensates for the age structure of a country. Unfortunately, LDCs have difficulties registering detailed statistics like ASDR. BiH is no exception to this. In fact, only recently data became available for BiH and for this reason the only ASDR comparison that can be made is from the most recent data found published in the 2008 Demographic Yearbook. Even here the information is incomplete for BiH because the sources for population by age, sex, etc. tables are of a different source and year than those for the deaths and death rates by age and sex table. Therefore the Demographic Yearbook does not list the death rates for BiH, only the number of deaths in each age group. Since this mortality comparison is unofficial, I have decided to use these most recent numbers despite the difference of one year (2007 and 2008) and the difference in sources to calculate a rough death rate for BiH.

The calculation I used was:  $\frac{\text{# of deaths in age group (2007)}}{\text{population in age group (2007)}} \times 1000$  In the case of Slovenia, the

**Table 3: Most recent data on Age Specific Death Rates**

Ages	[SLO] 2007(C)			[BiH] 2008 (ESDF)(C)		
	Death Rate	MALE	FEMALE	Death Rate	MALE	FEMALE
0-4	0.8	0.8	0.8	1.6	1.7	1.4
5-9	+0.1	+0.1	+0.1	0.2	0.4	0.2
10-14	+0.1	+0.1	+0.2	0.1	0.2	0.1
15-19	0.4	0.6	+0.3	0.4	0.7	0.2
20-24	0.8	1.2	+0.3	0.5	1.0	0.3
25-29	0.7	1.2	+0.2	0.7	1.3	0.3
30-34	0.8	1.2	+0.4	0.9	1.7	0.6
35-39	1.1	1.6	0.5	1.2	2.3	0.7
40-44	1.8	2.5	1.0	1.8	3.7	1.4

45-49	3.1	4.3	1.8	3.2	6.7	2.1
50-54	5.0	6.9	3.0	6.6	12.9	4.5
55-59	7.6	10.5	4.5	9.1	12.3	5.5
60-64	11.2	16.5	6.3	13.3	17.7	9.5
65-69	16.2	23.7	9.9	22.7	30.0	17.0
70-74	26.2	37.7	19.6	34.6	42.0	29.0
75-79	43.6	62.3	32.7	57.6	64.3	52.8
80-84	72.6	96.9	63.0	100.9	91.0	108.2
85+	156.2	187.1	152.4	125.5	140.0	119.8

Source: Demographic Yearbook 2007 & 2008 published by the United Nations.

data for death rates are calculated by the Demographic Yearbook because the data was gathered in the same manner (C) and the same year. It should not be a surprise after reading section 1 that the ASDR data is not as different as one might expect when comparing a MDC with a typical LDC because, as was noted in section one, the age structure of Slovenia and BiH is not different. Yet the trend that LDCs have a higher ASDR than MDCs is still apparent here as BiH with few exceptions, mostly at extremely older ages, has a higher ASDR than Slovenia across age groups and sex groups. The reason BiH, and in fact most LDCs have lower ASDR among the elderly is because very few people live long enough to die at extremely old age in these conditions. The total numbers of people over the age of 85 further illustrate this difference. According to 2007 and 2008 estimates, BiH with nearly double the overall population of Slovenia, had 25,057 people over the age of 85 while Slovenia had slightly more individuals over 85 with 25,423 persons.

Infant mortality rates (IMR), which were compared in section 1 from the most recent data, are also important indicators of development when examined over the course of 40 years. This is especially true in the case of these two countries which have data for back to 1970 individually and for the whole of Yugoslavia for the same span. Once more the data for the individual countries is in 5-year spans courtesy of the World Populations Prospects while the

data for Yugoslavia is given at certain years by the Demographic Yearbook in which the country did a survey or census. Table 4 also indicates a clear pattern typical of MDC and LDC relationships that shows IMR in Slovenia have consistently been below that of BiH and where applicable, below that of the national IMR. Also it is more apparent by looking across the time periods that IMR have drastically declined in the course of the 40 year period. This is not so much a localized trend as it is a world trend since 1970. It is also a world trend that females nearly always have lower IMR than males at all ages. The anomaly that sticks out on table 4 just as it has stuck out on other tables is the period 1990-1995. It is not indicated in the table, but the IMR for males and females increased from the period 1985-90 to 1990-95 from 21.9 to 23.6 for males and from 17.3 to 20 for females respectively. This statistic is another indicator that the war in BiH had a significant impact upon not just the male population who was of fighting age, but civilian population as well. Stress, fatigue, and even combat for women are among the causes for this backward trend in this period. Direct violence towards infants as they were

**Table 4: Infant Mortality Rates since 1970**

Years	[SLO]*			[BiH]*			[YUGO] [FYUGO]Ä		
	IMR both sexes per/1000 live births	Male	Female	IMR both sexes per/1000 live births	Male	Female	IMR both sexes per/1000 live births	Male	Female
1970-75 (1970)Ä	21.5	29.0	13.6	50.6	54.1	46.9	55.5	57.1	53.8
1980-85 (1978)Ä	13.5	14.6	12.3	27.0	30.0	23.7	33.8	35.5	32.1
1990-95 (1990)Ä	7.6	8.8	6.5	21.9	23.6	20.0	19.3	20.5	17.9
2000-05	4.1	4.6	3.6	14.0	15.8	12.2	-	-	-
2005-10	3.7	3.9	3.6	12.8	15.1	10.3	-	-	-

\*World Population Prospects (WPP) †Demographic Yearbooks published by the United Nations.

sometimes killed as bystanders to the war or exterminated in ethnic cleaning programs also contributes to this data. It is also less likely that infants would receive normal health care during



a war period. This was especially true in BiH's largest city and capital Sarajevo which was placed under siege for nearly 4 years in the early 90s deprived of basic necessities like food and water. In post war BiH, the trend of lowering IMR's has continued but remains far higher than Slovenia's which is comparable with major MDC's such as Germany and France.

The final mortality measure that factors into a comparison of MDC's and LDC's that will be examined is the causes by which deaths occur in each country. The expectation of an MDC is that because of the age structure of the population which is usually relatively older because of factors like better health care, less exposure to disease, better nutrition, and other factors, the greater percentage of the population that lives long enough to die of degenerative diseases. The norm for most LDC's is that the population rarely reaches an age where they can die of these factors. Instead, causes of deaths in LDC's have typically been caused by infectious diseases of all sorts due to improper medical treatment, poor sanitation, drinking water, and lack of nutrition among other factors. Once more it is unfortunate that BiH has not produced any data on causes of deaths since its independence was gained from Yugoslavia. Yet there can be some assumptions made by looking at the records of the [YUGO] & [FYUGO] data and estimates made about war casualties that can give an idea of the causes of death in BiH. No such records exists for Yugoslavia at or around 1970, so table 5 will begin with the 1979 data, include both [SLO90] and [FYUGO] for comparison around 1990 and then give the data for [SLO] with a comparison for context, in this case, Croatia. In no way should the inclusion of Croatia's data be seen as a replacement for that of BiH's, besides involvement in the same conflict, the reasons Croatia has been chosen for contextual comparison is its geographic significance to Slovenia and BiH, it separates the two and another reason is that data is available for Croatia in 2000 and 2008. Another reason Croatia cannot be a replacement but merely a measuring stick is because

Croatia has recovered economically far more than BiH and did not experience the level of devastation to the civilian population that BiH was unfortunate enough to experience. With this consideration in mind, table 5 shows the causes of deaths in three categories: degenerative diseases, infectious diseases, and injuries including automobile accidents, falls, suicides and murders. The data available in the table indicates across time periods and political boundaries the typical MDC pattern for causes of death which have miniscule rates of death due to infectious disease and a dominate proportion of the deaths caused by degenerative diseases. With the exception of the war years 1990-95 it could be assumed that BiH's data would look similar to this pattern based on previous tables with related mortality data like IMR and LEB. It is presumable that BiH has slightly higher numbers for infectious disease and injuries than Slovenia but that the majority of deaths since 1995 have been of the chronic or degenerative kind as well. Assumptions aside, it is interesting that the same causes of death have made up similar percentages since 1979. For instance the leading degenerative diseases in Yugoslavia,

**Table 5: Death rates by Cause since 1970 given in proportions of total deaths at a given time.**

	[SLO]			[YUGO][FYUGO]			Croatia (for contextual comparison only)		
Period	Degenerative Diseases	Infectious Diseases	Injuries	Degenerative Diseases	Infectious Diseases	Injuries	Degenerative Diseases	Infectious Diseases	Injuries
1979	-	-	-	90.3%	2.2%	7.5%	-	-	-
1990 [FYUGO] (1991)	89.3%	0.6%	9.6%	92.4%	1.1%	6.6%	-	-	-
2000	85.9%	0.5%	-	-	-	-	90%	1.0%	-
2008	90.9%	0.8%	8.3%	-	-	-	93.7%	0.6%	5.8%

Source: Demographic Yearbooks published by the United Nations.

Slovenia and like MDC's has continued to be "malignant neoplasm (cancer) of trachea, bronchus and lung," "Cerebrovascular disease (strokes)," and "Acute myocardial infarction (heart

attacks).<sup>14</sup> Traffic accidents, falls, and suicides make up a significant amount of the deaths by injuries, and this is also typical of other MDCs in the world. So why assume that BiH, an LDC also shares these characteristics in mortality with MDCs? This was explained partially in section 1 of the profile by describing BiH as a special case in terms of its LDC status. Its former membership in Yugoslavia and European customs makes it much more like former Russian states that are now LDCs than like LDCs in sub-Saharan Africa or tropical South Asia. It should also be no surprise that the causes of death for BiH would not be typical of other LDCs because of the age structure and relatively low rate of natural increase (RNI) which was shown in section 1 to be more typical of MDCs. Though we do not have good mortality records for BiH, estimates have been made as to the casualties inflicted who would be counted in the "injuries" column of the table. Estimates range anywhere from 60,000 to 250,000 persons killed or displaced because of the war. Only recently has there been any effort in Sarajevo for conducting a census or survey that might be able to assist researchers in such inquiries as this report has examined.

The mortality figures for Slovenia, BiH, and Yugoslavia indicate that Slovenia was always more developed in terms of the criteria with which organizations judge development. Even before the breakup of Yugoslavia this is evident by the higher LEB, CDR, and lower IMR. Yet BiH and Slovenia are relatively close in almost all categories of study excepting economic categories partially because of the reasons stated above and in section 1. It goes without saying that it would be much more beneficial for the comparison of these two countries if BiH had more accurate and recent data available, but the lack of records is also an indicator of an LDC. Across the world LDCs struggle for political stability, providing basic goods and services, border

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<sup>14</sup> Terms used by the World Health Organization, *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, 1975 revision* vol. I (Geneva, 1977), pp.745-755.

control, and many other aspects of nationhood that do not allow the opportunity for census or survey taking. Outside organizations have to work around these same issues to find out the information we do have about LDCs making it inaccurate at times. Like these outside organizations, I have been forced to make assumptions and calculations based on information gathered by different sources and at different times. In the absence of information, one has to do their best with what is available and in a way, one finds through this search the differences in LDCs and MDCs in ways other than numbers.

### Comparisons in Fertility

In section 1 and 2 of the demographic comparisons of Slovenia and Bosnia & Herzegovina (BiH) it had become apparent that while Slovenia is typical of other more developed countries (MDCs) in the world, BiH is not a typical less developed country (LDC) in categories other than economic status. BiH tends to resemble other "special cases" such as Russia and other Eastern European countries that have poor economies like LDCs yet demographic structures like MDCs, including: age structures, mortality statistics, and as this section will show, fertility statistics. In some categories BiH will actually have numbers that are more representative of a highly developed country than the MDC Slovenia. One of the reasons these special cases exist could be explained by Easterlin's relative income hypothesis which states "that the birth rate does not necessarily respond to absolute levels of economic well-being but rather to levels that are relative to those to which one is accustomed (Easterlin 1978; 1968)."<sup>15</sup> This theory could explain the low fertility numbers in Eastern Europe because the generation that grew up in the 1980s had a relatively high standard of living when places like Yugoslavia and Russia existed, but now that they are old enough to have children, they do not feel they have the means to support a family the way their parents had. It has yet to be

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<sup>15</sup> As stated in: John R. Weeks, *Population: An Introduction to Concepts and Issues*, Tenth ed. (Belmont, CA: Wadsworth, 2008), 97.

seen, but if Easterlin's theory is correct, BiH and other Eastern European countries should experience a rise in fertility soon as the generation that grew up in the 90s and 00s begins having children in an environment that has relatively stabilized in comparison. Meanwhile, like other MDCs in Europe, Slovenia's fertility rates have remained low and even increased recently. This increase could be due to a phenomenon noted by researchers led by Mikko Myrskylä which ties very high human development index (HDI) scores to rises in fertility.<sup>16</sup> Slovenia has an HDI of .929 which is the 29<sup>th</sup> highest in the world while BiH has an HDI of .71 and is the 68<sup>th</sup> in the world which is still respectable compared to LDCs in Sub-Saharan Africa which have HDIs of .4 or less.<sup>17</sup> The fertility comparisons contained in this section make more sense if we keep Easterlin and Myrskylä's theories in mind because, as we have seen in the previous two sections, the demographic comparisons of this particular MDC and LDC do not reflect the typical MDC, LDC relationship. This section will compare and discuss the differences or similarities of measures including, crude birth rate (CBR) and general fertility rate (GFR), total fertility rate (TFR), and age specific fertility rates (ASFR) along with contraceptive use and practices in each country.

Before we discuss the individual fertility measures, note that in section 2 the difficulties which were explained led to a lack of detailed mortality information for BiH. Fortunately, fertility statistics and estimations, including information on contraceptive use are available for comparison for both countries. Unfortunately, the issue of comparison before 1990 is still an issue because of the reasons discussed in Sections 1 & 2 involving the break up of Yugoslavia and the establishment of independent countries. Like in section 2, some information from 1970 to 1990 will be represented by Yugoslavia and in the case of 1990, the "Former Yugoslavia." In measures where information is

<sup>16</sup> M. Myrskylä, M. H. Kohler, and F.C. Billari. "Advances in Development Reverse Fertility Rate," *Nature* 460 (2009): 7416743, <http://www.nature.com/nature/journal/v460/n7256/full/nature08230.html>.

<sup>17</sup> UN Development Program. *Human Development Report 2009*. [http://hdrstats.undp.org/en/countries/country\\_fact\\_sheets/cty\\_fs SVN.html](http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs SVN.html).

available for Slovenia, BiH, and Yugoslavia it will be shown for each so they can be compared to the national statistics as was done in section 2.

The first measure that is generally considered when comparing fertility among countries is the CBR. A country's CBR is a good indicator of development because countries that have made it through to the 4<sup>th</sup> stage of the demographic transition typically have low CBRs for reasons usually related to what J.C. Caldwell called the "inter-generational net flow of wealth," a theory that claims byproducts of development like education reduce the economic value of children leads to fertility decline.<sup>18</sup> Because the proportion of the population that can potentially give birth is roughly the same in countries around the world, the CBR is a fairly useful statistic. Yet a more accurate general measure exist which divides the live births during a given time by the number of women in a population of child bearing age instead of the total population (which the CBR uses), this is the GFR. The GFR for the following table was calculated:

$$\text{GFR} = (\text{Number of resident live births} / \text{Number of females age 15-49 years}) \times 1,000^{19}$$

Table 1: CBR's and GFR's of Slovenia, BiH, and Yugoslavia from 1970 to 2010.						
Year	SLO*		BIH*		YUGO^	
	CBR Live Births per 1000 persons	GFR Live Births per 1000 females ages 15-49	CBR Live Births per 1000 persons	GFR Live Births per 1000 females ages 15-49	CBR Live Births per 1000 persons	GFR Live Births per 1000 females ages 15-49
1970	16.7	64	21.3	82	17.8	70
1980	14.6	59	18.2	67	13.4	66
1990	12.9	41	12.9	43	14.1	56.8
2000	9.8	35	9.8	36	-	-

<sup>18</sup> J. C. Caldwell, *Theory of Fertility Decline*, (Academic Press, London: 1982).

<sup>19</sup> Statistics for this found in the 1973, 81, 92, 02, and 08 U.N. demographic yearbooks.

2010	9.2	39	9.2	35	-	-
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\*World Population Prospects (WPP) ^ Demographic YB

Much like in the mortality tables in section 2 we see that Slovenia has historically had numbers more like that of MDCs than BiH or Yugoslavia. The numbers of Yugoslavia as a whole always tend to fall between that of our MDC and LDC indicating that even while they were part of the same country, the regions were at different levels of development. Though there is a steady decline in fertility for each country over time as one might expect, there are some interesting anomalies. One is the sharp decline in the GFR from 1980 to 1990 in BiH and Slovenia. Compared to the other 10 year differences the drops are pronounced in this period. BiH had a change of 24 for their GFR while Slovenia had a change of 18, both numbers exceed any of the other differences between decades. This is due to two factors, first of all is the war years which for obvious reasons stressed the population and limited fertility. The other reason is that the World Population Prospects gives the numbers of births as an average in 5 year increments. Therefore, the 1990 numbers reflect the average number of births in the period 1990-1995 which included the entire conflict. I chose the 1990-1995 data instead of the 1985-1990 data to indicate the impact of the war on each country. The other anomaly to take note of on table 1 is the recent rise in GFR in Slovenia, even surpassing BiH for the first time in at least 40 years. This could in fact be proof of the Myrskylä theory that was mentioned earlier that at very high levels of development, fertility rises. This will be an interesting trend to watch for in the coming decades. In general, table 1 shows that both countries have seen a drop in fertility typical of higher development, but Slovenia has always showed signs of higher development and the recent rise is yet another one of these signs. Meanwhile, the continuing decline in fertility in BiH might indicate a similar problem that other Eastern European countries are experiencing where their population stagnates, but the differences for CBR and GFR for BiH between 2000 and 2010 are small and might mean that they have leveled off and with some luck might return to replacement levels.

The fertility measure that is most used to find out if a country is achieving replacement levels is the TFR. This rate calculates the average number of children a woman would have based on the current ASFR $\phi$  if she is fecund over the course of her normal child bearing years (15-49). Because low fertility is generally considered to be an indicator of higher development, most MDC $\phi$  have a TFR of less than 2, or replacement level, while LDC $\phi$  tend to have higher TFR $\phi$ . For instance, Sub-Saharan African countries have TFR $\phi$  greater than 5.<sup>20</sup>

**Table 2: UNData  
Estimates of Total Fertility Rates  
for Slovenia and BiH  
1970-2015**  
Average Births per woman during her  
reproductive lifetime

Years	SLO	BiH
1970-1975	2.19	2.63
1980-1985	1.88	1.99
1990-1995	1.36	1.53
2000-2005	1.23	1.28
2010-2015	1.47	1.24

As we have seen, BiH is different than the LDC $\phi$  in Sub-Saharan Africa. In fact table 2 shows clearly that neither country has been at or above replacement levels since the later half of the 1970 $\phi$ . In many ways, the table 2 tells the same story as table 1. Both countries have witnessed overall declines marking the transition into the 4<sup>th</sup> stage of the demographic transition. Both countries also experienced a

sharp decline in TFR during the war years and the recent fertility increase in Slovenia is evident as well. This data in addition to a high percentage of the population being over 65 in both countries discussed in section 1 suggests that it will take a lot of time and conscious effort for TFR $\phi$  to reach replacement levels in either country. One reason for the apparent stagnation of the TFR $\phi$  in BiH is potentially the political infighting and administrative shortcomings that were discussed in section 1. Meanwhile the relative lack of political divisions and strong service sector of the Slovenian economy appear to be helping towards achieving TFR levels higher than past decades.

<sup>20</sup> United Nations. *UNData*. <http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3A54>.



The next fertility measure which is an indicator of development is the ASFR. The ASFR is the birth rate of a given age group (usually 5 years) at a given time. This can be expressed as:

$$\text{ASFR} = \frac{\text{Total number of live births in a given age group}}{\text{Total number of women in that age group}} \times 1000.$$

The typical MDC characteristically has a higher fertility rate among older age groups, usually the 25-29 age group and higher as opposed to the tendency for LDCs to have a higher portion of their births spread among the younger age groups.

**Table 3a: ASFR for Yugoslavia from 1970-1990 births per 1000 women in each age group**

Years	15-19	20-24	25-29	30-34	35-39	40-44	45+
1970	54	154	151	79	38	11	2
1980	50	158	108	64	27	8	1
1990	37.3	141.3	117.5	55.3	19.5	4.5	.6

U.N. Demographic Yearbooks

**Table 3b: ASFR for Slovenia from 2000-2010 births per 1000 women in each age group**

Years	15-19	20-24	25-29	30-34	35-39	40-44	45-49
2000	7.5	57.9	101.2	58.9	19.2	3.1	0.1
2010	7.2	53.8	101.0	68.5	22.7	4.3	1.0

U.S. Census Bureau

**Table 3c: ASFR for BiH from 2000-2010 births per 1000 women in each age group**

Years	15-19	20-24	25-29	30-34	35-39	40-44	45-49
2000	18.5	89.1	80.2	44.7	19	4.6	.3
2010	15.8	77.1	83.2	50.4	19.7	5.3	.5

U.S. Census Bureau

Unlike the previous measures, the differences that show up when comparing ASFRs are much more pronounced. Here we see the general trends within each country as it has experienced lower fertility rates, and witnessed an increase in the average age of mothers. But what stick out the most is the

differences when we compare the countries to each other. Slovenia consistently has far lower rates in the age groups 15-24 and much higher rates in the 25-34 age groups. This is a clear indicator of a MDC. Yet there is a curious trend in the age groups 35 and older which defies explanation. If we examine the ages at which marriages occur by age of groom, it still supports the notion that Slovenia should have higher ASFRs at higher ages than BiH. The highest proportions of marriages in Slovenia are among grooms in the 25-29 age group with 38% of the marriages in 2007, while the highest proportion in BiH are among grooms in the 20-24 group.<sup>21</sup> The best explanation is likely an economic one. Married couples are delaying reproduction because of lower living standards than what they were used to (remember Easterlin), and thus there are more people having children at older ages than in Slovenia where younger couples enjoy a higher standard of living. This leads us to the methods by which fertility can be delayed.

Contraception data for BiH and Slovenia is spotty to say the least. For instance the only data acquired for BiH is from 2000 and even worse, the contraceptive data for Slovenia is from 1994/95.<sup>22</sup> Even with these short comings there are some clear differences that can be identified between the two countries. For contraceptive use, MDCs are typically characterized by using modern methods including sterilization, the pill, Condoms, diaphragms, and other means to avoid pregnancy. On the other hand, LDCs typically have higher proportions of married people using traditional methods for birth control such as rhythm (planning around ovulation) and withdrawal. The contraceptive data for Slovenia and BiH support the trend that LDCs tend to use contraceptives less. While 73.8% of married couples use some form of birth control in Slovenia, only 47.5% use some form in BiH.<sup>23</sup> The methods in each country are also fairly typical in comparisons among MDCs and LDCs.

<sup>21</sup> U.N. Demographic Yearbook 2007.

<sup>22</sup> World Contraceptive Use Table. 2007.

<http://www.un.org/esa/population/publications/contraceptive2007/contraceptive2007.htm>. Note: Data includes only women who are married or in union.

<sup>23</sup> Ibid.

While the main means of birth control in Slovenia are the pill (21.7%) and the intrauterine device (IUD) (21.5%), both modern methods, the main means of birth control in BiH is withdrawal (26.9%), a traditional method.<sup>24</sup> These facts leave us with conundrum because if, as the 2007 Demographic Yearbook indicates, a higher percentage of the population is getting married in BiH, and are not using birth control of any kind or using traditional methods that are thought to be less effective than modern ones, then why does BiH have lower fertility rates than Slovenia recently? At this question I can only speculate that there are either abstinence factors to be considered or fecundity issues due to pollution, stress, abortion, or other factors that keep fertility measures low while Slovenia has enjoyed a recent upturn in fertility.

Fertility is a very interesting gauge of a country's developmental status. It can be very complicated when dealing with countries such as BiH which does not share most of its trends with that of other LDCs. Yet we see with ASFRs and contraceptive use that there can be some definitive contrasts between our MDC and this "special case" LDC. It is also clear that demographic theories are being tested in each country. Slovenia appears to be providing additional proof for Myrskylä's theory of the correlation between very high HDI and TFRs and both countries have shown evidence that there has been a change in the net flow of wealth between parents and children as Caldwell had postulated. As far as contraceptive use is concerned, given the indications in fertility measures, and measures from the previous sections, I would have to imagine that contraceptive use in Slovenia and especially in BiH has increased overall and moved more towards modern methods since 2000 and therefore are much more similar than they were. I also assume that slowing down of the decline in fertility rates could mean that BiH will follow Slovenia with a turn towards replacement levels because of Easterlin's theory that supports a hope that the generation who grew up in hard times will

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<sup>24</sup> Ibid.

feel better about their situation by comparison and have more kids. These are the assumptions which the fertility figures for these countries cause me to believe.

### **Comparisons in Age and Sex Structure**

The final section of the demographic profiles of Slovenia and Bosnia & Herzegovina (BiH) is an examination of the age and sex structure of the population. There are many factors to consider regarding age and sex structure. The dependency ratio, median age, and overall age structure of a population tend to be good indicators of development. For example, higher median age and old age dependency ratios are usually typical of more developed countries (MDCs) while lower median age and higher dependency ratios among people under 15 years of age are typical of less developed countries (LDCs). We have witnessed in previous sections that BiH does not fit the typical LDC profile while Slovenia usually does fit the profile of an MDC.

This section will first examine the data for sex ratios going back to 1970 for both countries. Sex ratios are simply a ratio of men to women in a given population. The second aspect that will be examined is the median age of the two countries over the last five decades. Median age is a measure which finds the middle age of a population and is much more representative of a population compared to the average age because it is not affected by outliers. The third part of this section will observe the data concerning dependency ratios and the proportion of the population either under 15 or over 65. Dependency ratio is the proportion of the population that theoretically needs to be supported by the population aged 15-64. The fourth part will offer a view of exponential growth rates, population projections, and doubling times for the two countries based on the information from three sources of population data. The final

portion of this section will address migration issues which also affect the age/sex structure of a country as well as its total population figures.

Sex ratios can show a lot about the age structure of a population because there is a natural tendency for a higher sex ratio at birth (more males than females) that wanes as a cohort in a given population ages because of the natural tendency for higher life expectancy for females. The rapidity and degree of change from a high sex ratio to a low sex ratio can be an indicator of a country's development. This is called the age transition, "a shift from a young population with more males than females to an older population with more females than males."<sup>25</sup> It is typical of an LDC to have higher sex ratios because LDCs typically have causes of deaths, like infectious diseases, that are not gender related while people in MDCs usually die from degenerative diseases that tend to afflict males at earlier ages. Compared to LDCs in 1970 up to 2010, that exhibit sex ratios over 103, both Slovenia and BiH have sex ratios that are closer to the MDC average of around 93 over the same time span.<sup>26</sup> This is not a surprise, as it has been shown in

much of the comparisons that BiH is not a typical LDC. Nonetheless, there is an interesting difference between the two countries. Slovenia's sex ratio has gone up slightly since 1970 while BiH's has gone down slightly in the past few

<b>Table 1: Sex Ratios for Slovenia and BiH since 1970.</b>		
Year	<b>SLO</b> Males per 100 females	<b>BiH</b> Males per 100 females
1970	93.8	96
1980	93.4	96.9
1990	93.9	97.7
2000	95	93.1
2010	95.5	92.7

World Population Prospects: The 2008 Revision

decades. War is the likely reason for the decline in sex ratio because we can assume, that if it were not for the war in the early nineties, the sex ratio which was increasing would have

<sup>25</sup> Brea, class lecture, November 3, 2010

<sup>26</sup> World Population Prospects: The 2008 Revision

continued to increase like that of Slovenia. An increase in sex ratio would seem to contradict the tendency of MDCs having lower sex ratios than LDCs as mentioned above. The reason for this becomes more apparent in the next table which illustrates the sex ratios at 10 year age groups. From this table we can see the theory of the delayed-degenerative disease stage at work. Notice the ages (*italicized*) at which sex ratios tip in favor of females for Slovenia compared to the ages when it does the same for BiH. Since we know from section 3 that the leading killers in both countries are degenerative diseases, it is clear that men in BiH are dying of their

<b>Table 2: Sex Ratios by 10 year age groups.</b>	2010	
	SLO Males per 100 females	BiH Males per 100 females
At Birth	105	107
0-9	105	107
10-19	106	107
20-29	105	102
30-39	105	92
40-49	102	86
50-59	102	92
60-69	92	84
70-79	67	78
80-89	36	58
90-99	16	25

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biological normal ratio of 105.

degenerative diseases in an age group that still makes up a larger proportion of the population than in Slovenia and therefore lowers the overall sex ratio of the country. Sex ratios at birth are also an interesting statistic for comparison because it is an indicator of social favoritism for one sex or the other. This is the data that becomes lopsided in countries where there are strong preferences for males like China and India. Both Slovenia and BiH show no such preference as their sex ratios at birth are within the parameters of the

**Table 3: Median Age of Slovenia and BiH since 1970**

Years	SLO	BiH
1970	31	22.6
1980	31.7	25.9
1990	34.1	29.7

The median age of a country tends to be higher in MDCs than LDCs and this can be shown in the world

2000	38	35.1
2010	41.7	39.3

World Population Prospects: The 2008 Revision

averages of MDCs and LDCs. While MDCs have an average median age of 39.7 years in 2010, LDCs have an average median age of 26.8.<sup>27</sup> The reasons for these differences are obvious, and the most important reason concerning Slovenia and BiH is the delaying of degenerative diseases which means that, coupled with low fertility, there is a high proportion of older people. Table 3 shows that Slovenia has had a higher median age than BiH

even going back to 1970. While differences in the epidemiological stages in the countries explain the differences between the two countries, the general trend of an increase in median age is more likely explained by declines in fertility that were explained in section 3. Both countries are relatively old and near the average MDC median which further shows that BiH and other Eastern European countries which show similar age structures are not typical LDCs.

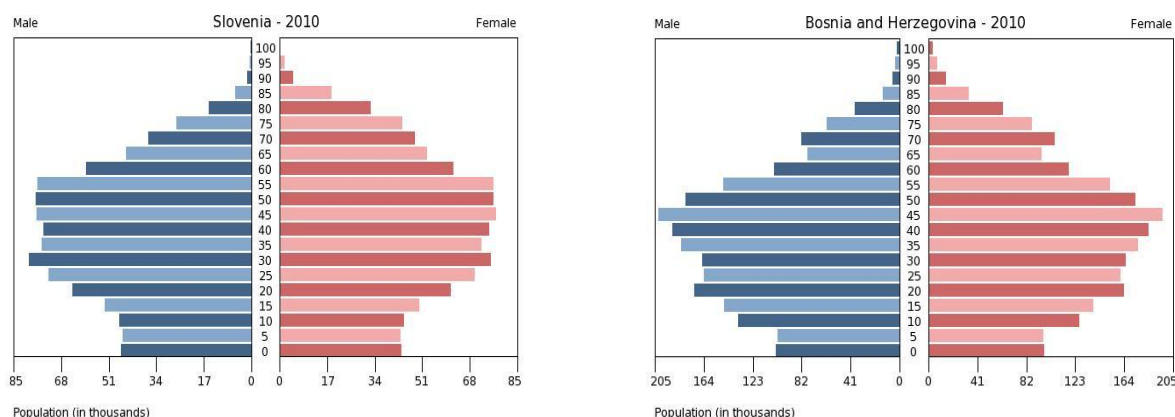
The same reasons for a higher relative median age among BiH and Slovenia can also be supported when comparing the dependency and old age dependency ratios of a country. The dependency ratio and the old-age dependency ratio are the proportions of a population that are dependent on the population between the ages of 15 and 64. It is assumed when figuring these ratios that the population 15-64 is physically able to work and is employed and therefore supporting the rest of the population through taxes or direct support. The typical LDC has a younger population and therefore has a higher percentage of people under 15 years of age and a

<sup>27</sup> World Population Prospects: The 2008 Revision

**Table 4: Percentage of Population less than age 15, age 65 and greater and Dependency Ratios.**

Year	SLO				BiH			
	%<15	%>65	Dependency Ratio	Old-Age Dependency Ratio	%<15	%>65	Dependency Ratio	Old-Age Dependency Ratio
1970	24.1%	9.9%	34%	15%	34.6%	4.7%	39%	8%
2010	13.8%	16.4%	30.2%	24%	15.2%	13.9%	29.1%	20%

high dependency ratio while its old-age dependency ratio is very low. In contrast, the typical MDC has a high proportion of people over 65, a similar dependency ratio to LDCs, but a high old-age dependency ratio. Table 4 shows that both countries have seen significant rises in the proportion of the population 65 and over since 1970 leading to rises in the old-age dependency ratios as well. Slovenia has even seen a shift in the greater part of its dependents from a higher percentage being under 15 to a higher percentage being 65 and over. Unfortunately, it does not appear that either country managed to take advantage of a low dependency ratio between 1970 and 2010 which would mean a large working population to spur economic growth. Dependency ratios have remained relatively static and similar in comparison. These population pyramids



provided by the U.S. Census Bureau's International Data Base show the similarities of the age structures of both countries. They also show the slight differences that were discussed above. For instance the bases for each pyramid are nearly the same in proportion to the middle of the pyramid which illustrates the similar percentages of people 14 and under. But the middle of the



pyramid for Slovenia reaches a plateau from ages 25 to 55 for both sexes and tapers off slowly as age increases. In contrast to BiH's pyramid that peaks at 45 for both sexes and then tapers off drastically thereafter. Slovenia's plateau like structure is more typical of other highly developed countries and the slower tapering off of older age groups explains the slightly larger old-age dependency ratio.

One of the most important implications for examining demographic data is making projections or predictions for authorities, planners, and for the general population. One way to make these foresights in population is by using the equation for exponential growth of a population. This equation is expressed as  $P_t = P_0 e^{rt}$  where  $P_t$  is the population at a later time,  $P_0$  is the population at a previous time,  $e$  is Euler's number,  $r$  is the rate of growth, and  $t$  is the time interval between  $P_0$  and  $P_t$ . By rearranging the equation to solve for  $r$ , we can plug that rate into the original equation and project a population based on that rate for any time in the future.

<b>Table 5a: Population Projections based on Exponential Growth Rate acquired by Comparing 2005 and 2010 World Population Prospect: The 2008 Revision Estimates.</b>		
Year	SLO	BiH
2005	2,001,000	3,781,000
2010	2,025,000	3,760,000
2015 Projection	2,049,288	3,739,116
2020 Projection	2,073,867	3,718,348

<b>Table 5b: Population Projections based on Exponential Growth Rate acquired by Comparing 2008 U.S. Census Bureau IDB Estimates with 2010 C.I.A. World Factbook Estimates.</b>		
Year	SLO	BiH
2008 U.S. Census Bureau Estimate	2,008,000	4,590,000
2010 CIA Factbook Estimate	2,003,136	4,621,598
2015 Projection	1,991,027	4,703,187
2020 Projection	1,978,992	4,783,824

This is what is being done in tables 5a and 5b. Each table uses different estimates over different time intervals, and in the case of these two countries, there are some significant differences based on the data being used. Table 6 helps explain these differences because each country has both

positive and negative rates of growth depending on the source of the estimates. The World Population Prospect: The 2008 Revision which was used for table 5a shows a small increase in population for Slovenia based on 2005 and 2010 estimates and a decrease in population for BiH. Table 5b shows the opposite trend when comparing the 2008 U.S. Census Bureau's IDB estimates with the 2010 C.I.A. World Factbook estimates. Again these differences are due to the special nature of the LDC. As a MDC, Slovenia can be expected to have miniscule growth rates that border the line between positive and negative growth. LDCs will typically have higher rates of growth, but BiH also has a rate that borders between positive and negative. The rates are

very small for both countries and since the real numbers are not available because of a lack in census taking, the population estimates vary and the result is a disagreement in the projections. If one needs more proof as to how small these rates are, notice the doubling time ( $\frac{1}{r} \ln 2 = \frac{0.693}{r}$ ) of both countries are over 200 years. Compare

**Table 6: Rates of Growth and Doubling Times for Slovenia and BiH based on Separate Source Data.**

	Exponential Rate of Growth	Doubling Time
<b>SLO</b> Based on World Population Prospects: The 2008 Revision Estimates	0.23%	289 years
<b>BiH</b> Based on World Population Prospects: The 2008 Revision estimates	-0.11%	N/A
<b>SLO</b> Based on U.S. Census Bureau IDB and C.I.A. World Factbook estimates.	-0.12%	N/A
<b>BiH</b> Based on U.S. Census Bureau IDB and C.I.A. World Factbook estimates.	0.34%	204 years

that with the U.S. which has a 1.1% rate of growth and a doubling time of around 65 years.

While Slovenia can blame their low rates of growth on being a typical MDC, BiH's reasons for a low rate of growth can best be accounted for with the same reasoning used in section 3. Other Eastern European countries like Russia, Bulgaria, Romania, and so forth also show low or even negative rates of growth because of collapsed economies and an overall lower quality of life than previous generations enjoyed.

The final criteria for examining age/sex structure are the influences of migration on the populations of BiH and Slovenia. The war years play a considerable role in this aspect, especially for BiH which was hit much harder by the conflicts of the early 1990s. The total number of displaced people during the war years has still not been enumerated, but it is well known that many Bosnian refugees came to Croatia and even Slovenia while many Bosnian Serbs made their way to Serbia to escape the conflict. Table 7 shows the degree of emigration from BiH in the time period 1990-1995. These figures do not count refugees or other people only temporarily leaving the country, they only reflect the number of people that intended to

leave the country and settle elsewhere. Even so,

<b>Table 7: Net Migration Rates since 1970.</b>		
Years	SLO per 1000 population	BiH per 1000 population
1970-1975	2.0	-4.4
1980-1985	1.9	-1.1
1990-1995	3.9	-53.7
2000-2005	2.3	3.3
2005-2010	2.2	-0.5

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the net migration rate (NMR) for BiH in that period is staggering compared to other time periods that were free from conflict. We can even see an unprecedented increase in Slovenia's net migration in this period which is in part due to the influx of Bosnian immigrants. The only increase for BiH on this table comes after the war as Bosnians and Serbs decided to return to their

homes. In fact the net migration for 1995-2000 was 16 for BiH. Since the return of these people, BiH has again reestablished a NMR typical of an LDC like it had before the conflict, yet the number of immigrants including those returning after the war is still far less than those that emigrated during the conflict. Many Bosnians who left during the conflict still live in Western Europe and North America. Another problem with BiH's migration trend at this time is that most of the people that were able to leave and permanently immigrate were people of higher

economic and educational status. These were mostly intellectuals and professions over age 30 who could afford to move their families out, leaving a social gap that is still reflected in the middle age groups today. Meanwhile, Slovenia's NMR has been positive and steady since 1970 and is another indication of Slovenia's MDC status. Net migration appears to be a contributing factor in aiding the low fertility rates common among MDCs in Europe which Slovenia shares.

The age/sex structures of Slovenia and BiH once more reflect the typical MDC nature of Slovenia and the atypical LDC nature of BiH. BiH exhibits many characteristics that are more commonly associated with MDCs. But in this section and in previous sections, we see that the reason for this is an Eastern Europe character rather than an LDC character. Poor economies, lower standards of living compared to the days of Yugoslavia and the Soviet Union, and conflict have made most of Eastern Europe a "special case" for demographic research. It also is clear that more demographic data needs to be collected for both countries because rates of growth and population projections vary widely based on the estimates of different agencies. In fact, a lack of information or varying information among sources has made the comparison of these countries difficult throughout. That which is clear is that in spite of being part of the same country 20 years ago; these two separate nations are very different places with very different reasons for having relatively similar age/sex structures.

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